

U.S.S.N. 10/811,621

Remarks

Thorough examination by the Examiner is noted and appreciated.

The claims have been amended.

No new matter has been added.

Support for the amended and new claims is found in the previously and originally presented claims, the Figures (including Figures 1, 1A, and 2) and the Specification.

[0030] Referring to FIG. 1, an electrochemical plating (ECP) system 10 suitable for implementation of the present invention includes a standard electroplating cell having an adjustable current source 12, a bath container 14, a copper anode 16 and a cathode 18, which cathode 18 is the semiconductor wafer substrate that is to be electroplated with copper. The anode 16 and cathode/substrate 18 are connected to the current source 12 by means of suitable wiring 38. The bath container 14 holds a bath 20 typically of acid copper sulfate solution which may include an additive for filling of submicron features and leveling the surface of the copper electroplated on the substrate 18.

[0034] As indicated in step S2 of FIG. 2, the electrochemical plating (ECP) electrolyte bath solution 20 is prepared in the bath container 14. Next, as indicated in step S3, the organic composition mixture of the present invention is prepared and then suspended as a composition suspension layer 26 in the bath solution 20. The anode 16 and substrate 18 are then immersed in the bath solution 20 and connected to the adjustable current source 12 typically through wiring 38.

U.S.S.N. 10/811,621

Claim Rejections under 35 USC 112

The claims have been amended to overcome Examiners Section 112, first and second paragraph rejections.

While it is respectfully noted that Examiner is mistaken in asserting that "is disposed as" is a process limitation (denoting an act), and where such language is clearly accepted terminology to claim apparatus structure, Applicants have nevertheless removed the language in an effort to further prosecution on the merits.

Claim Rejections under 35 USC 102/103

1. Claims 1-2, 4-7, 9, 12-13, 21-22, and 23-24 stand rejected under 35 USC Section 102(b) as anticipated by, or in the alternative under 35 USC Section 103(a) as obvious over Meine et al. (US 6,689,223) and INEOS Oxide ([www.ineos oxide.com](http://www.ineosoxide.com), pp1-4).

Meine et al. discloses a **cleaning composition** having at least two continuous phases, one lower aqueous phase I and an upper aqueous phase II immiscible with the lower phase I, which

U.S.S.N. 10/811,621

can be temporarily converted into an emulsion by shaking (i.e., the aqueous phases are stacked upon one another).

Meine et al., in non-analogous art (is not in the same field of endeavor such as electroplating of metal, but is in the cleaning field), discloses:

"A method of cleaning hard surfaces by contact with an aqueous, liquid, multiphase, surfactant-containing cleaning composition having at least two continuous phases, one lower aqueous phase I and an upper aqueous phase II immiscible with the lower phase I, which can be temporarily converted into an emulsion by shaking and which cleaning composition contains no more than 50% by weight of nonionic surfactants, based on the total quantity of surfactants present." (see Abstract)

Examiner asserts that the disclosure of Meine et al. in connection with a cleaning composition that has more than 50% by weight of nonionic surfactants based on the total quantity of surfactants excluding a composition with a pH of 9 including 2% by weight C10-C14 fatty alcohol + 1PO (propylene oxide)+1EO (ethylene oxide) ether and 2% by weight C12-C14 fatty alcohol +9EO butyl ether (see col 2, lines 16-30), discloses the elements of Applicants claim:

"a composition comprising an organic acid and a non-ionic polymer mixed with said organic acid, said non-ionic polymer

U.S.S.N. 10/811,621

selected from the group consisting of an alkoxylated alcohol, an alkoxylated amine, and an alkylphenol alkoxylate;"

Examiner merely concludes that the **C10-C14 fatty alcohol + 1PO (propylene oxide)+1EO (ethylene oxide) ether** of Meine et al. is an alkoxylated alcohol. Examiner has included an excerpt from INEOS Oxide that merely establishes that alcohol ethoxylates are non-ionic and are surfactants.

In addition, Meine et al. teach that the cleaning solution has a **lower continuous phase and an upper continuous phase (i.e., immiscible phases staked upon one another)** (col 3, lines 10-47);

However, even **assuming arguendo**, that Meine et al. discloses an alkoxylated alcohol at a level of 2 wt % among a number of other surfactants, and disclose a **lower continuous phase and an upper continuous phase (i.e., immiscible phases staked upon one another)** which may be shaken up to form a temporary emulsion of mixed phases, such a fact does not help Examiner in producing Applicants invention including:

"wherein said composition consists of a **suspended layer within said electrolyte solution, said suspended layer consisting**

U.S.S.N. 10/811,621

of a continuous layer extending across a dimension of said electrolyte solution in said electrolyte bath container, said suspended layer of sufficient dimension to form a wetting layer on a substrate as said substrate is passed through said suspended layer into said electrolyte solution, said electrochemical plating system further comprising an anode in said electrolyte solution to carry out metal electroplating on said substrate comprising said wetting layer"

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

"The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

"First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must

U.S.S.N. 10/811,621

be a **reasonable expectation of success**. Finally, the prior art reference (or references when combined) **must teach or suggest all the claim limitations**. The teaching or suggestion to make the claimed combination and the reasonable expectation of success **must both be found in the prior art, and not based on applicant's disclosure.**" *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

With respect to claim 7, Examiner is further mistaken in arguing that 8 % by weight of citric acid disclose by Meine at col 2, line 28 or 8.5 % (Table 1, col 16) is equivalent to Applicants 10 wt%. Examiner has provided no support that one of ordinary skill in the art would consider 8 wt % or 8.5 wt % to be about 10 wt % **in the relevant art of electroplating solutions or that one skilled in the art would expect electroplating solutions differing only by the amount of the citric acid solution to have about the same properties**. Moreover, Applicants do not claim a range, but a specific amount.

2. Claims 1, 4, 21 and 22 stand rejected under 35 USC Section 102(b) as anticipated by, or in the alternative under 35 USC Section 103(a) as obvious over Bokisa (US 6,676,823).

U.S.S.N. 10/811,621

Examiner admits that Bokisa fails to disclose "wherein said composition is disposed as a suspended layer within said electrolyte solution, said suspended layer spanning said electrolyte bath container, said suspended layer of sufficient dimension to form a wetting layer on a substrate as said substrate is passed through said suspended layer into said electrolyte solution".

As such, Bokisa fails to disclose or suggest Applicants instantly claimed invention.

"First, there must be some **suggestion or motivation**, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. **Second**, there must be a **reasonable expectation of success**. Finally, the prior art reference (or references when combined) **must teach or suggest all the claim limitations**. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." *In re Vaack*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

U.S.S.N. 10/811,621

3. Claims 1-2, 4-7 and 21 - 22 stand rejected under 35 USC Section 102(e) as anticipated by, or in the alternative under 35 USC Section 103(a) as obvious over Motoki et al. (US 6,911,138).

Examiner admits that Motoki et al. fail to disclose "wherein said composition is disposed as a suspended layer within said electrolyte solution, said suspended layer spanning said electrolyte bath container, said suspended layer of sufficient dimension to form a wetting layer on a substrate as said substrate is passed through said suspended layer into said electrolyte solution".

As such, Motoki et al. fail to disclose or suggest Applicants instantly claimed invention.

"First, there must be some **suggestion or motivation**, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. **Second**, there must be a **reasonable expectation of success**. **Finally**, the prior art reference (or references when combined) **must teach or suggest all the claim limitations**. The teaching or suggestion to make the claimed combination and the reasonable expectation of success

U.S.S.N. 10/811,621

must both be found in the prior art, and not based on applicant's disclosure." *In re Vaack*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

4. Claim 1 stands rejected under 35 USC Section 102(b) as anticipated by, or in the alternative under 35 USC Section 103(a) as obvious over Gomes et al. (US 5,250,105).

Examiner admits that Gomes et al. fail to disclose "wherein said composition is disposed as a suspended layer within said electrolyte solution, said suspended layer spanning said electrolyte bath container, said suspended layer of sufficient dimension to form a wetting layer on a substrate as said substrate is passed through said suspended layer into said electrolyte solution".

As such, Gomes et al. fail to disclose or suggest Applicants instantly claimed invention.

"**First**, there must be some **suggestion or motivation**, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. **Second**, there must

U.S.S.N. 10/811,621

be a **reasonable expectation of success**. Finally, the prior art reference (or references when combined) **must teach or suggest all the claim limitations**. The teaching or suggestion to make the claimed combination and the reasonable expectation of success **must both be found in the prior art, and not based on applicant's disclosure.**" *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Conclusion

The cited art fails to produce or suggest Applicants invention, and therefore fails to make out a *prima facie* case of anticipation or obviousness..

Applicants have further amended their claims.

Applicants respectfully request favorable consideration of their claims and submit that Applicants Claims are now in condition for allowance. Such favorable action by the Examiner at an early date is respectfully solicited.

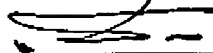
In the event that the present invention as claimed is not in a condition for allowance for any other reasons, the Examiner is respectfully invited to call the Applicants representative at his

U.S.S.N. 10/811,621

Bloomfield Hills, Michigan office at (248) 540-4040 such that necessary action may be taken to place the application in a condition for allowance.

Respectfully submitted,

Tung & Associates



Randy W. Tung
Reg. No. 31,311